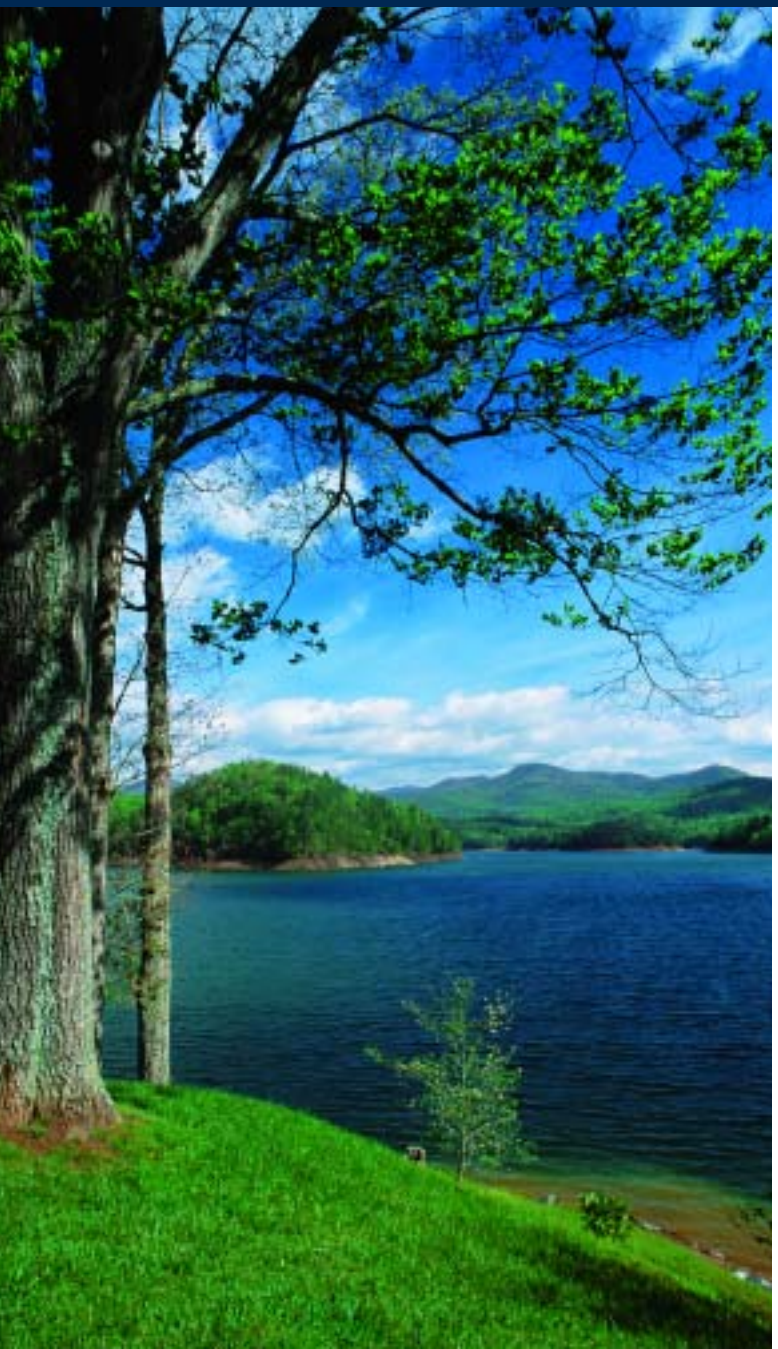
Valley facts

a guide to the Tennessee Valley Authority

All About the Tennessee Valley Authority



With facilities that generate the electricity to serve more than 8.3 million people, the Tennessee Valley Authority is the nation's largest public power producer. This unique federal corporation provides affordable, reliable electricity to consumers in the seven-state Tennessee Valley region. But TVA does much more than generate power. It also works to support economic development in the Valley and serves as an environmental steward of the nation's fifth-largest river system.

What TVA Does

Supplies affordable, reliable power

Three hundred sixty-five days a year, TVA is on the job. Energy from 29 hydroelectric plants, 11 fossil power plants, six combustion turbine sites, three nuclear plants, and a pumped storage hydropower plant—as well as green power from wind turbines, methane gas, and solar-collection panels—travels through 17,000 miles of TVA transmission lines and a network of 158 local distributors to reach the homes and businesses of more than 8.3 million people. Research and development by TVA's Public Power Institute uses this system to showcase technologies that will shape the future of power production and delivery.

Learn more online at www.tva.com/power

Supports a thriving river system

TVA manages the Tennessee River system in a comprehensive way that ensures that all goals are appropriately supported. TVA dams prevent millions of dollars in flood damage annually and generate clean, efficient electric power. The dams create reservoirs that support a $2 billion recreation industry. TVA manages 100 public recreation areas that offer opportunities for boating, fishing, hiking, and camping. The river highway formed by TVA's dams and locks—652 navigable miles on the Tennessee River alone—helps speed almost 55 million tons of goods to market each year. Careful stewardship protects a vast supply of drinking water and invaluable wildlife habitat.

TVA holds all these uses of the river in a delicate balance. We have managed the river's resources since 1933, and our years of stewardship experience add up to one clear result: maximum benefits for everyone in the Tennessee Valley.

Learn more online at www.tva.com/river

Stimulates economic growth

Affordable, reliable power is a big draw to businesses and industries, and the Tennessee River system is an essential resource for transportation and recreation. But so is the abundance of services and financial resources available through TVA economic development programs: capital investment loans for new and expanding businesses; site-selection services; small- and minority-business support; community development; economic research; and technical support services, including engineering and architectural design.

All these services in direct support of the Valley's economy have helped companies add or retain hundreds of thousands of jobs. The fact is that economic development is at the core of TVA's reason for being—to improve the quality of life in the Tennessee Valley.

Learn more online at www.tva.com/econdev



The Business of Public Power

TVA is different from utilities that have shareholders, people who expect a financial return. Instead, TVA has stakeholders—the Tennessee Valley residents who have a vital stake in the resources we share. That's what it means to be a public power company. And no tax dollars support TVA's environmental stewardship programs; they're entirely financed from our power operations. In fact, TVA pays more than a quarter of a billion dollars each year in lieu of taxes to state and local governments in the Valley. These payments help fund schools, roads, and other public services.

Providing power in the public interest is what drives our bottom line. What are we doing to make sure that TVA continues to bring its unique mix of benefits to the Tennessee Valley?

STRATEGIC OBJECTIVES

- **Improving life in the Tennessee Valley through integrated management of the river system and environmental stewardship.** *We continue to balance the competing demands on the river system and carefully manage the environmental and safety impacts of all our operations.*

- **Meeting customers' needs with affordable, reliable electric power.** *TVA's power system is growing and improving to keep pace with ever-increasing demand.*

- **Demonstrating leadership in sustainable economic development in the Valley.** *TVA is dedicated to helping attract and retain new and better jobs for the people of the Valley.*

- **Continuing the trend of debt reduction.** *Billions of dollars in debt reduction have lowered the portion of TVA's revenues absorbed by interest payments.*

- **Reducing TVA's delivered cost of power relative to the market.** *We are improving production processes and cutting operating costs. We're also working closely with local distributors and directly served customers to ensure that we continue to be the power supplier of choice.*

- **Strengthening working relationships with all of TVA's stakeholders.** *TVA maintains an ongoing dialogue with stakeholders on important issues.*

Learn more about TVA's corporate values and driving principles online at www.tva.com/abouttva

Initiatives

TVA collaborates with partners on the following programs to help improve the quality of life in the Valley.

- ***energy right*®:** Facilitated through distributors of TVA power, this program helps everyone use electricity wisely at home and at work. Learn more at www.energyright.com.
- **Green Power Switch®:** TVA and local power distributors have created a program that produces electricity from renewable energy sources and adds it to the Valley's power mix. Learn how at www.tva.com/greenpowerswitch.
- **Geothermal Heat Pumps:** TVA and local power distributors help schools and businesses across the Valley with technical assistance, feasibility studies, and financial incentives for innovative geothermal heat pump systems. Geothermal systems take advantage of constant ground temperatures to lower heating and cooling bills. Learn more at www.tva.com/insidetva/jun_19_01/geothermal.htm.




Plant and Reservoir Profiles

TVA's power system derives flexibility and reliability from its diverse mix of power generation—roughly 63 percent fossil and combustion turbines, 29 percent nuclear, 8 percent hydro, and a growing store of green power. The following profiles highlight the variety of plants and reservoirs in the TVA system.

TVA Hydro Plants

TVA hydro plants not only contribute to power generation, but also create reservoirs that provide navigation, flood control, and recreation opportunities.

- Fontana Dam, located in the mountains of western North Carolina, is the highest dam east of the Rocky Mountains. The Appalachian Trail, which extends 2,000 miles from Georgia to Maine, crosses the top of Fontana Dam.
- The Raccoon Mountain pumped storage project near Chattanooga, Tennessee, with a generating capacity of 1,530,000 kilowatts of electricity, is TVA's largest hydro facility. Water is pumped to a mountaintop reservoir and then released to generate electricity when more power is needed.
- TVA operates a string of three TVA dams on the Ocoee River in southeast Tennessee. Water released from two of these dams helps make the Ocoee one of the top 10 whitewater rivers in the country.

TVA Fossil Plants

- In 2001 TVA's coal-fired plants generated 100 million megawatt-hours of electricity.
- TVA has spent over $3 billion on emission control equipment at its coal-fired plants since 1970. An additional $1 billion is being spent on new nitrogen oxide emission controls at seven plants, and another $1.5 billion is being spent at four plants to reduce sulfur dioxide emissions. The controls will be in place by 2010.

TVA Nuclear Plants

- Browns Ferry Nuclear Plant in Alabama was TVA's first nuclear power plant, and the largest in the world when it began operation in 1974.
- Between 1998 and 2000, Sequoyah Nuclear Plant near Chattanooga had the second lowest average operating costs among the nation's nuclear plants.
- Watts Bar Nuclear Plant in east Tennessee received the 2001 Utility Achievement Award from the American Nuclear Society for its operating performance and achievements.

TVA Combustion Turbines

Combustion turbines are designed to start quickly to help to meet the demand for electricity during peak operating periods.

- Lagoon Creek Combustion Turbine Plant, completed in 2001 in west Tennessee, was the first TVA facility that generated power using combustion turbines alone. In 2002 TVA completed the Kemper County Combustion Turbine plant, TVA's first generating plant in Mississippi. Combustion turbines are also located at four of TVA's coal-fired power plants.

TVA Green Power

- TVA has constructed a wind power generating site on Buffalo Mountain near Oak Ridge, Tennessee, and a number of solar and methane gas sites across the Valley to provide electricity for the Green Power Switch program. This program gives Valley residents the opportunity to choose renewable energy to supply their needs.

Learn more about all of TVA's power plants and reservoirs at www.tva.com/sites/sites_ie.htm.

Where TVA Is

LEGEND

- State Line
- Water
- Power Service Area
- TVA Watershed
- TVA Dam
- TVA Pumped Storage Plant
- TVA Combustion Turbine Site
- TVA Fossil Plant
- TVA Nuclear Plant
- TVA Customer Service and Economic Development Offices
- TVA Solar Site
- TVA Wind Site
- TVA Methane Gas Site

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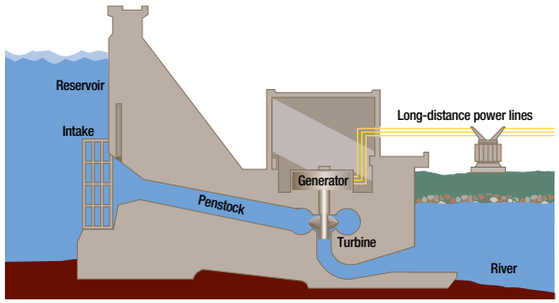
September 2002

How TVA Power Plants Work

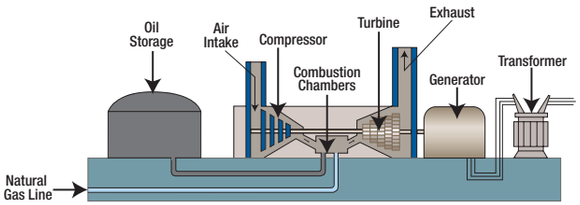


Hydroelectric Dam



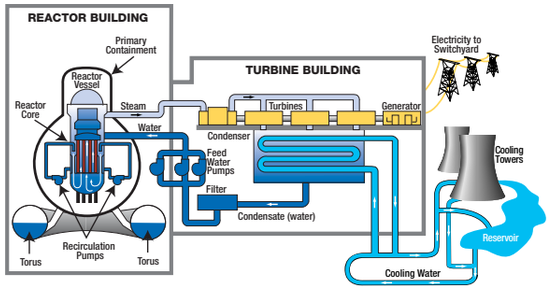
Water from the reservoir rushes through the penstock into the powerhouse. The water spins the turbine, which drives the generator. Inside the generator is a large electromagnet that spins within a coil of wire, producing electricity.

Combustion Turbine



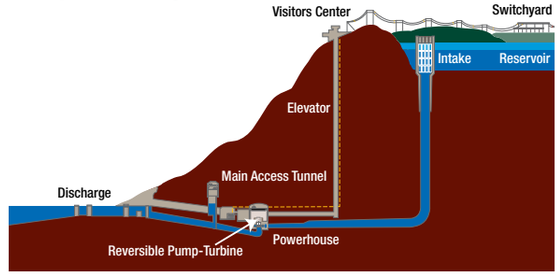
The turbine burns either natural gas or oil. Fuel is mixed with compressed air in the combustion chamber and burned. High-pressure combustion gases spin the turbine, which drives the generator.

Nuclear—Boiling Water Reactor



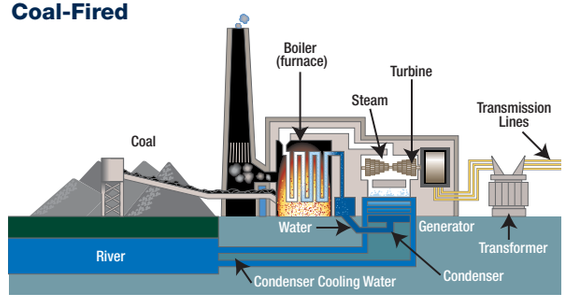
Water is heated through the controlled splitting of uranium atoms in the reactor core and turns to steam. Pumps force the water through the reactor at top speed, maximizing steam production. Steam drives the turbines that turn the generator that makes electricity. Cooling water from the river condenses the steam back into water. The river water is either discharged directly back to the river or cooled in the cooling towers and reused in the plant again.

Pumped Storage



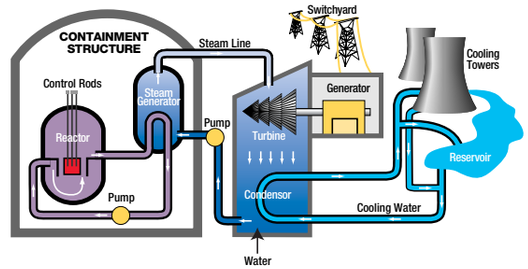
During periods of low power demand, the pump-turbine pumps water up into the mountaintop reservoir. During periods of high demand water from the reservoir flows down through the mountain to the power plant, generating electricity to meet increased demand.

Coal-Fired



Coal burned in the boiler heats water to produce steam. The steam spins the turbine, which drives the generator.

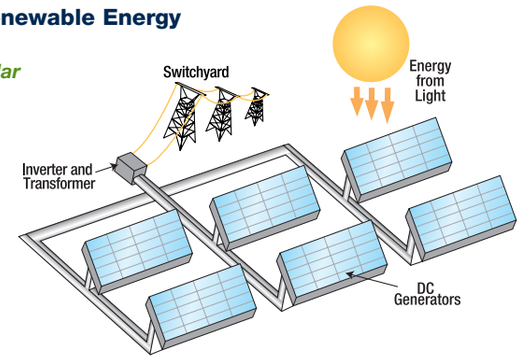
Nuclear—Pressurized Water Reactor



Water is heated through the splitting of uranium atoms in the reactor core. The water, held under high pressure to keep it from boiling, produces steam by transferring heat to a secondary source of water. The steam is used to generate electricity. Cooling water from the river condenses the steam back into water. The river water is either discharged directly back to the river or cooled in the cooling towers and reused in the plant again.

Renewable Energy

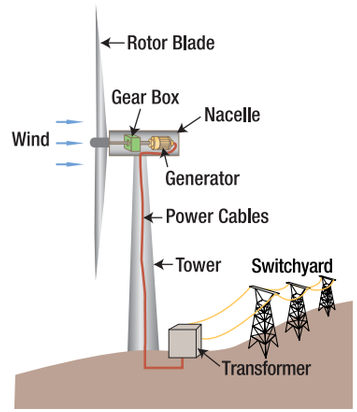
Solar



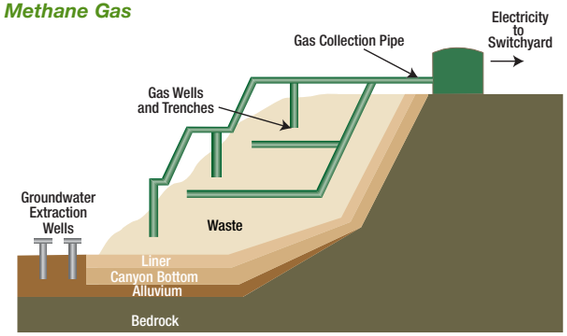
Photovoltaic (PV) systems use semiconductor cells that convert sunlight directly into electricity. Direct current from the PV cells, which are arrayed in flat panels, flows to inverters that change it to alternating current.

Wind

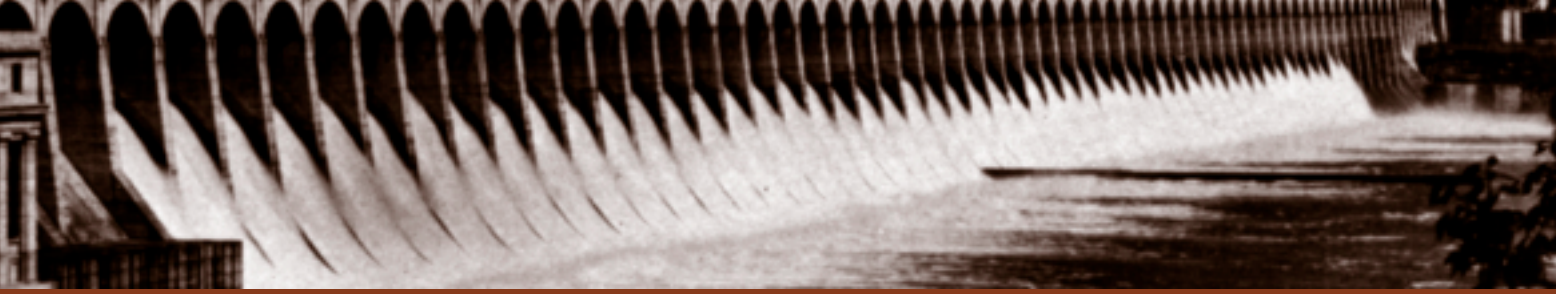
A turbine and gear box are mounted in a casing called a nacelle, and rotor blades are attached to the turbine. The turbine localizes the energy of the turning rotor blades in a single rotating shaft that generates electricity.



Methane Gas



Pipes collect methane gas produced by decaying waste, and the gas is burned to generate electricity.



The History of TVA

It all began in 1933, when Congress signed the TVA Act. The legislation created a new kind of federal agency, one "clothed with the power of government but possessed of the flexibility and initiative of a private enterprise . . . charged with the broadest duty of planning for the proper use, conservation, and development of the natural resources of the Tennessee River."

Work got under way immediately. TVA completed Norris, its first dam, in 1936. By the end of World War II, the agency had built 16 more. Electric power wasn't the only benefit of these dams—the main reasons they were built were to prevent the flooding that had ravaged the Valley and to provide irrigation for better, more productive farming. Those benefits drew industry to the region, creating desperately needed jobs. And the newly navigable river channel served as an avenue for importing and exporting goods, increasing the Valley's economic viability.

As the century progressed, so did TVA. In 1959 the agency's power program became self-financed—it was no longer tax-supported, but began to pay its own way. To meet the Valley's growing needs, TVA expanded its power production facilities, adding fossil fuel and nuclear energy plants throughout the 1950s, '60s, and '70s. Today, its electricity rates are among the lowest in the nation, and TVA serves as a worldwide example of sustainable natural-resource management and sustainable economic development.

Learn more online at www.tva.com/abouttva

Learn More About TVA

Want to know more about the nation's largest public producer of electric power? Go to **www.tva.com**.

Other important contacts:

- Get up-to-the-hour reservoir-level information and water-release schedules at **http://lakeinfo.tva.com**, or call one of these numbers.

  Knoxville, Tennessee: **865-632-2264**
  Chattanooga, Tennessee: **423-751-2264**
  Muscle Shoals, Alabama: **256-386-2264**
  Elsewhere in the Tennessee Valley: **800-238-2264** (toll-free)
  TDD (hearing impaired): **800-438-2264**

- Find out about employment opportunities at **www.tva.com/employment**, or call **888-275-8094**.
- Read more about TVA economic development at **www.tva.com/econdev.**
- Learn about shoreline property use and current land-use actions at **www.tva.com/river/landandshore.**
- Locate TVA reservoirs and power plants at **www.tva.com/sites.**
- Shop for topographic maps, aerial photography, and navigation charts at **www.tva.com/river/mapstore**, or call 800-MAPS-TVA (800-627-7882).
- Browse our catalog of surplus materials at **www.tva.com/surplus**, or call **615-374-7400**.
- TVA Watershed Teams work to improve water quality and reservoir access across the Valley. Contact your team at **www.tva.com/river/landandshore/landuse_contacts.htm.**
- At the Public Power Institute, science and technology expertise helps consumers more fully realize the benefits of the electric industry through innovations in clean power production, delivery, and use. Visit **www.publicpowerinstitute.org.**
- Get information on investing in TVA power bonds at **www.tva.com/finance**.

www.tva.com

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